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Crabs of the Ogasawara Islands

VII. Third Report on the Species Obtained from Stomachs of Fishes

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Abstract

Fragments of carapaces and chelipeds found in stomach contents of *Dentex tumifrons* (TEMMINCK et SCHLEGEL) [Renkodai], *Epinephelus fasciatus* (FORSSKÅL) [Aka-hata], and *Parupeneus pleurostigma* (BENNETT) [Ryukyu-himeji] from the Ogasawara Islands were identified. A new species of the family Goneplacidae, *Lophoplax sextuberculata* sp. nov., is described, and some rare species are systematically noted and figured.

Introduction

The previous two parts (TAKEDA & KURATA, 1976, 1977b) dealing with the crabs obtained from stomachs of fishes revealed that the interesting species are still now found in stomach contents of fishes from shallow water. As most of the specimens are fragmental and more or less digested, the identification of such carapaces and chelipeds is generally difficult. In some cases, however, the specimens are obtained in the fresh conditions just after deglutition. The examination of these specimens is highly valuable to explain the crab fauna, since the collection of crabs living in the rocky bottom of shallow water is really difficult even if using the scuba apparatus.

In the present report are recorded some remarkable cases recently accumulated in our laboratories. Among the specimens examined at present, one species of the Goneplacidae obtained from *Parupeneus pleurostigma* (BENNETT) is new to science. The type specimens are preserved in the National Science Museum, Tokyo (NSMT).

Before going further, we take the chance to register some species of the family Hapalocarcinidae for the crab fauna of the Ogasawara Islands. TAKEDA and TAMURA (1980, 1981) recorded *Cryptochirus coralliodytes* HELLER, 1861, *C. trii* FIZE et SERÈNE, 1955, *Favicola rugosa* (EDMONDSON, 1933) and *F. japonica* TAKEDA et TAMURA, 1981 from Chichi-jima Island. All the species are new to the Ogasawara Islands and registered as Nos. 184, 185, 186 and 187.

Results of Identification

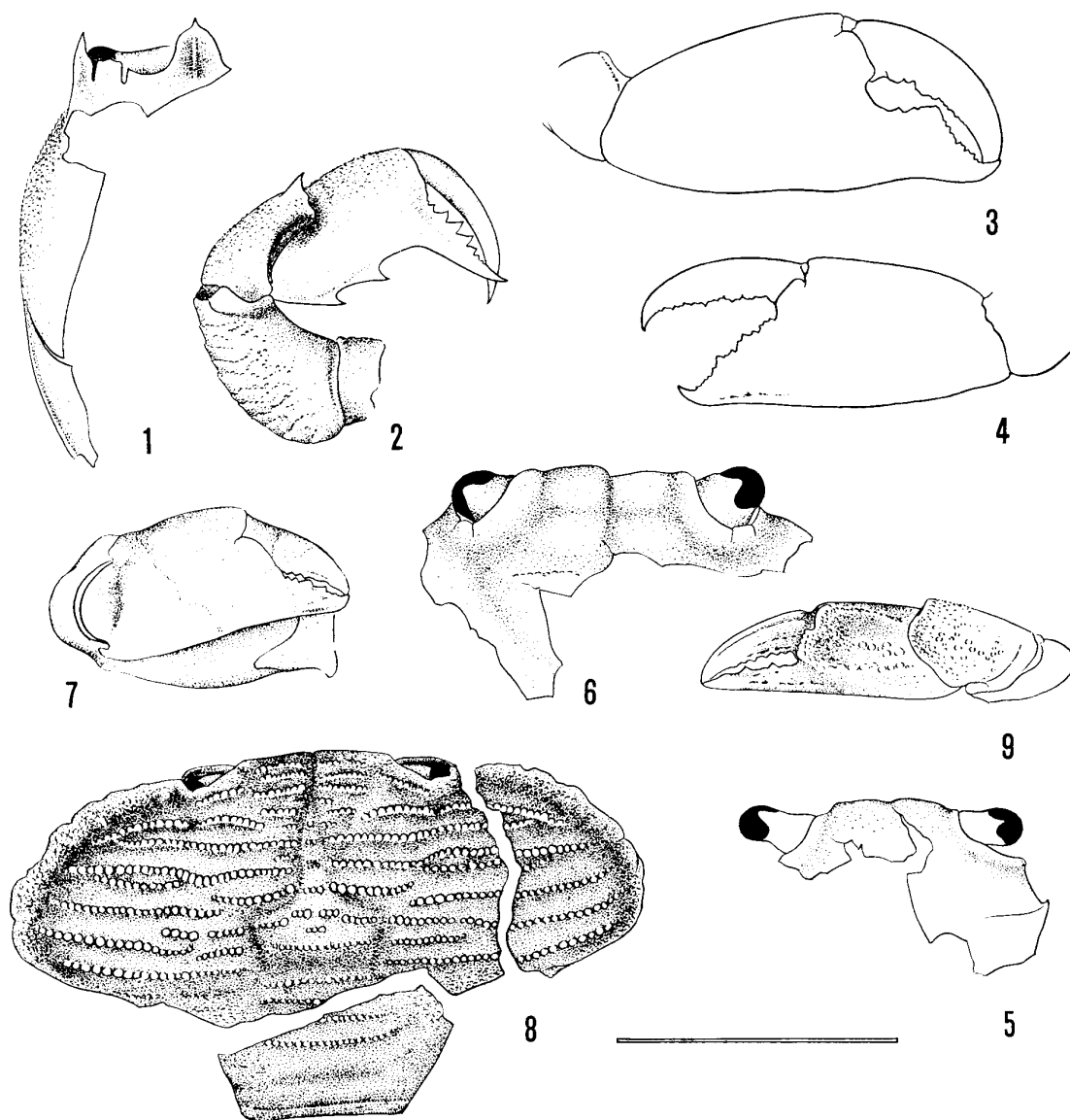
1) Crabs obtained from 27 specimens (29.4–35.8 cm in length) of *Dentex tumifrons* (TEMMINCK et SCHLEGEL) of the Sparidae, which were fished off Kitano-shima Island, 150–325 m deep, in June 1978, are as follows: Left marginal part of carapace (Fig. 1), a pair of chelipeds (right one in Fig. 2), a smaller left cheliped, and some fragments of ambulatory legs, referable to *Notopoides latus* HENDERSON; left cheliped of a xanthid crab; a pair of chelipeds (Figs. 3, 4) and a left chela of a possible goneplacid crab. Since *D. tumifrons* has the physiological habit vomiting the stomach contents with stomach itself just after landing, it is rather difficult to get the specimens. Those recorded at present were obtained from the alimentary canal.

Notopoides latus is extremely rare, but its identification leaves no doubt due to the excellent figures in the original report and the direct comparison with a female trawled by the R/V *Sôyô-Maru* off the Ogasawara Islands and donated by Prof. T. OKUTANI of Tokyo University of Fisheries. It is characteristic in having the collar-shaped frontal and orbital regions, with two deep fissures on each supraorbital border. In the fragment at hand the external orbital angle is markedly prominent as figured. This species has hitherto been known only from off Little Kei Island (HENDERSON, 1888) and the Kyushu-Palau Submarine Ridge (SAKAI, 1980), 250–465 m deep. The station recorded by Dr. SAKAI is, however, really in the west of the Ogasawara Islands. *Notopoides latus* HENDERSON, 1888 (the Raninidae) is registered for the crab fauna of the Ogasawara Islands (No. 188).

2) Fragments of the following many species were found in stomach contents of 28 specimens (23.0–37.0 cm in length) of *Epinephelus fasciatus* (FORSSKÅL) of the Serranidae caught off Ane-jima Island on March 3, 1980: A juvenile mantis shrimp; *Palaemon* sp. (a juvenile, with ca. 15 mm in total length); an *Alpheus* shrimp (both chelipeds); a *Galathea* species (a damaged carapace); *Thalamita danae* STIMPSON (left half of carapace of a juvenile); *Actaea nodulosa* WHITE (carapace of a young, with right cheliped); a xanthid crab related to *Nanocassiope granulipes* (SAKAI) (both chelipeds); *Paramedaeus simplex* (A. MILNE EDWARDS) (left half of carapace of a young); *Pseudoliomera hellerii* (A. MILNE EDWARDS) (a juvenile, with 4.5 mm in carapace breadth); *Xanthias gilbertensis* BALSS (anterior part of carapace, with both chelipeds, and both chelae of a smaller specimen); *Etisus electra* (HERBST) (anterior half of carapace, with left cheliped, of a young); *Neoliomera striata* BUITENDIJK (carapace and detached chelipeds and ambulatory legs); *Lybia tessellata* (LATREILLE) (anterior half of carapace of a young—Fig. 5).

Xanthias gilbertensis BALSS, 1938 (the Xanthidae) is new to the Ogasawara Islands (No. 189). It was originally reported from the Gilbert Islands and later by TAKEDA and MIYAKE (1968) from the Ryukyu Islands, who doubted the validity of *X. oahuensis* EDMONDSON, 1951. The fragments and chelipeds (Figs. 6, 7) were compared with a male from the east coast of Ani-jima Island collected by the senior author in 1976.

Neoliomera striata BUITENDIJK, 1941 (the Xanthidae) was vivid lemon-yellow,



Figs. 1-2. *Notopoides latus* HENDERSON—Frontal and marginal parts of carapace (1) and right cheliped in outer view (2).

Figs. 3-4. Both chelae of a possible goneplacid crab.

Fig. 5. *Lybia tessellata* (LATREILLE)—Anterior part of carapace.

Figs. 6-7. *Xanthias gilbertensis* BALSS—Anterior part of carapace (6) and right cheliped in outer view (7).

Figs. 8-9. *Neoliomera striata* BUITENDIJK—Carapace (8) and left chela in outer view (9).

Scale represents 1 cm for 1-4, 8 and 9; and 5 mm for 5-7.

being, as figured, surprisingly characteristic in the carapace ornamentation (Figs. 8, 9); carapace widely transverse, with thin anterolateral borders; dorsal surface traversed with many transverse lines of pearly granules, median gastric region being demarcated. This specimen agrees well with the original description based on a female from Obi latoe collected by the Snellius Expedition in the eastern part of the East Indian Archipelago. This fine species had hitherto been known by the original description, and thus new to Japanese waters and registered for the Ogasawara Islands crabs (No. 190). Fragments of the characteristic yellow crab, *N. striata*, were also found in the stomach contents of *Epinephelus fasciatus* collected off Chichi-jima Island on July 5, 1980.

3) Three specimens identified with a new species of *Lophoplax*, a male of *Ebalia humilis* TAKEDA, and a megalopa were found in stomach contents of *Parupeneus pleurostigma* (BENNETT) of the Mullidae from Takinoura Bay, Ani-jima Island collected by Mr. Minoru MASUDA on September 28, 1981. All the specimens are good in condition.

Ebalia humilis was described on two females (3.4 and 3.9 mm in carapace breadth) and three juvenile specimens, being noted on its general similarity to *E. nana* IHLE and *E. sakaii* TAKEDA et MIYAKE. The fully developed male at hand (3.5 mm in breadth) has the sculptured carapace, with the strongly angulated lateral wings, somewhat like the juvenile males originally remarked; the median part of the posterolateral border of the carapace is strongly tuberculated dorsally, and the intestinal region is also fairly convex posteriorly; the chelipeds are disproportionately large; the merus is especially stout, with a blunt tubercle on its posterior border; the carpus is small, and the lower border of the palm is strongly convex; the fingers irregularly toothed and meet along the distal halves, leaving a wide gape proximally. The chelipeds agree with the figure of the right cheliped of "*Praebebalia taeniata* TAKEDA" obtained from the stomach contents of *Gnathodentex aurolineatus* (LACÉPÈDE) and figured by us in previous part (1977). As noted later, the good specimens of *P. taeniata* obtained from stomach contents corrected our apparent error.

The new goneplacid species described in the following pages under the name of *Lophoplax sextuberculata* TAKEDA et KURATA (the Goneplacidae) is registered for the Ogasawara Islands crabs (No. 191).

4) Four fresh specimens of *Praebebalia taeniata* TAKEDA were found in stomach contents of *Parupeneus pleurostigma* (BENNETT) of the Mullidae (29.9 cm in length and 410 g in weight) caught at the west of Chichi-jima Island on October 18, 1983. One of them is a male with 3.2 mm in carapace breadth, and other three are ovigerous, measuring 3.5–3.6 mm in breadth. This small leucosid species was recently established by the senior author on a male from the northwest of Ani-jima Island, in which the chelipeds and ambulatory legs were missing. It was originally said that a broad band of dark color along the branchial margins across the intestinal region is characteristic of this species. The specimens at hand are well agreeable with the original description and figures. The notes on the chelipeds and ambulatory legs are added as follows:

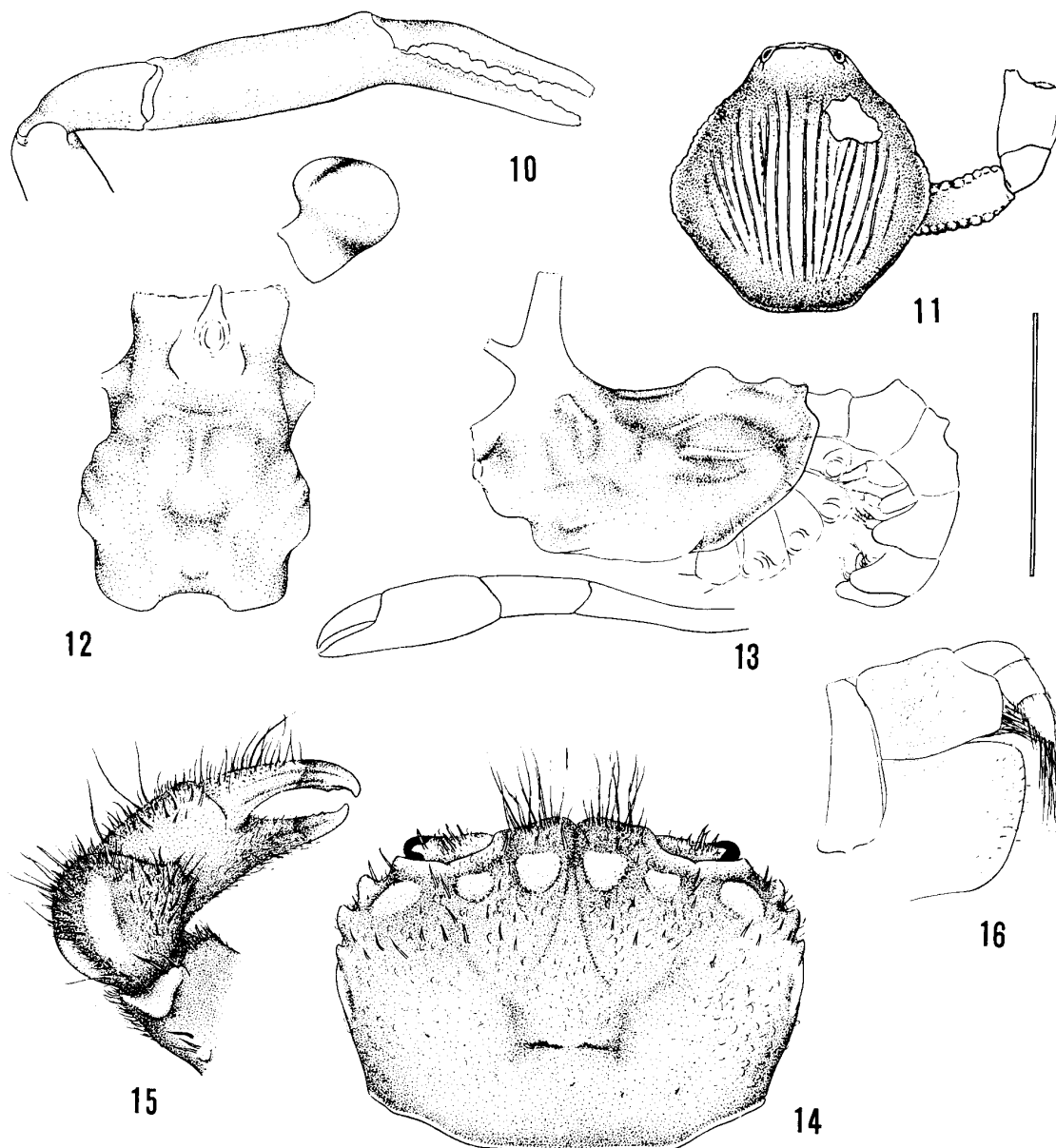


Fig. 10. *Praebitalia taeniata* TAKEDA —Right chela in outer view.

Fig. 11. *Leucosia* sp. —Carapace, with imperfect right cheliped.

Figs. 12–13. *Megalopa* of *Eplumula phalangium* (DE HAAN) —Carapace, with right eye, in dorsal view (12) and carapace, with abdomen and left cheliped, in lateral view (13).

Figs. 14–16. *Lophoplax sextuberculata* sp. nov., holotype —Carapace (14), left chela (15) and right third maxilliped (16).

Scale represents 5 mm for 14 and 15; 3.5 mm for 11; and 0.25 mm for 10, 12, 13 and 16.

Chelipeds cylindrical and very long in both sexes (Fig. 10), with two bands of dark color on each merus; cutting edges irregularly toothed throughout their lengths; ambulatory legs comparatively long. In the previous part of the present series, as noted elsewhere, we figured the right cheliped of a small leucosid crab as that of *P. taeniata*, but the present study revealed that it must be referred to that of *Ebalia humilis* TAKEDA.

In the same stomach contents were a juvenile crab referable to *Leucosia* (Fig. 11) and a megalopa larva (Figs. 12, 13). The juvenile has the carapace only 3.6 mm in breadth, traversed by a number of longitudinal brownish linear stripes. The thoracic sinus is not well developed. The megalopa larva is characteristic in having a long dorsal spine associated with a forward-directed accessory spine at its proximal part. In the specimen at hand the frontal part of the carapace is entirely broken off, but the general shape is extremely close to the megalopa of *Latreillia australiensis* HENDERSON of the Latreillidae figured by WILLIAMSON (1968). Even if the long and widely divergent supraorbital spine ending in the characteristic anterior and posterior spines are not used for comparison, the close similarity fully justifies its identification with *Latreillia*. In Japanese waters two species of *Latreillia* are commonly distributed, but one of them, *L. valida* DE HAAN, is a deeper-water inhabitant. The present megalopa is reasonably referred to *L. phalangium* DE HAAN, under the suggestion of Mr. K. FUKUDA of Kumamoto University, to whom our cordial thanks are extended. Recently WILLIAMS (1982) revised the genus *Latreillia* and assigned one of the Japanese species, *L. phalangium*, to the type of his new genus *Eplumula*, in which the Australian species was also included. *Eplumula phalangium* (DE HAAN, 1839) is endemic to Japanese and adjacent waters from Aomori Bay to the vicinity of Jeju Island in the northern part of the East China Sea. According to TAKEDA (1978), it is known from the sea around Nii-jima Island in the Izu Islands, and thus the geographical range was extended southward to the Ogasawara Islands (No. 192).

Description of a New Species

Lophoplax sextuberculata sp. nov.

(Figs. 14–16)

Type specimens. Takinoura Bay, Ani-jima I., Ogasawara Is.; 2 ♂♂ (paratypes, NSMT-Cr 8950), 1 ♀ (holotype, NSMT-Cr 8949), from stomach contents of *Parupeneus pleurostigma* (BENNETT); Sept. 28, 1981; M. MASUDA.

East of Tanega-shima I., southern Japan, ca. 70 m deep; 1 ♂ (paratype, NSMT-Cr 5396); June 15–18, 1975; M. TAKEDA.

Description of holotype. Breadth and length of carapace, 8.2 and 6.2 mm, respectively. Carapace quadrilateral, and about three-fourths as wide as long. Its dorsal surface markedly flattened laterally and posteriorly, weakly declivous anteriorly, being ill-defined and sparsely covered with short stiff setae and soft shaggy hairs;

anterior part in front of gastric region traversed by six raised, nude areolets, which are symmetrically arranged at each side; the innermost is somewhat heart-shaped, and the median is similar, but smaller and proportionally wider; the outermost is oblique along anterolateral border of carapace. Front cut into two lobes by a median wide notch; each lobe most strongly developed near frontal median notch, being very weakly concave near supraorbital angle, which is obtuse; supraorbital border transverse for its most part, having a small, but distinct notch at the middle.

Supraorbital angle more or less produced, but obtuse, being followed by three tuberculated anterolateral teeth; first two nearly equal to each other in size and shape, and the last similar to the precedings in shape, but about half in size. Posterolateral border slightly longer than the anterolateral, and only weakly convergent; about anterior third just behind last anterolateral tooth is callous and obtusely ridged.

Chelipeds covered with shaggy, rather stiff setae of variable lengths; distal margin of merus thickened at its upper part; carpus ornamented with a longitudinal callous ridge on its upper surface, its outer margin being also callous; surfaces of palm and fingers granulated; fingers darkened for less than distal halves.

Ambulatory legs of right side missing. Ambulatory legs slender, first three pairs attaining one and a half times as wide as carapace; each segment covered with stiff setae on both borders; in first three pairs distal margin of each merus rather thickened, and upper surface of carpus raised, with a longitudinal furrow along anterior border.

Notes on paratypes. Two males found together with the holotype are much smaller, measuring 5.2 and 3.8 mm in breadth. Most of the ambulatory legs and the left cheliped of the smaller male are missing. These specimens quite well agree with the holotype, except for the asymmetry of the chelipeds; the palm and fingers of the larger cheliped are smooth without hairs and granules. Although the smaller male may be not fully matured, the first pleopod is seemingly well developed, being the *Pilumnus*-type.

The male from Tanega-shima Island is also well agreeable with the specimens from the Ogasawara Islands. The carapace is 5.5 mm in breadth. In general the stiff setae on the margins of the carapace, chelipeds and ambulatory legs are prominent, and the dorsal nude areolets are not distinctly delimited. In life this male was light yellowish brown, with pink nude areolets and callous ridges on the chelipeds and ambulatory legs.

Remarks. As noted by TAKEDA (1977a), the genus *Lophoplax* is represented by *L. sculpta* (STIMPSON, 1858) from the Ryukyu Islands, *L. bicristata* TESCH, 1918 from Indonesian waters, *L. takakurai* SAKAI, 1935 from Japanese mainland, and *L. teschi* SERÈNE, 1971 from the South China Sea. In revising the literature it must be pointed at present that *Pseudocryptocoeloma symmetrinudus* EDMONDSON, 1951 from Samoa is transferred to *Lophoplax*. This species is known only by the holotype male with the carapace length and breadth being 5 and 6.5 mm, respectively. The original figures are somewhat diagrammatic, but eight prominent nude areas symmetrically arranged on the dorsal surface indicate the true systematic position. It is rather difficult to

define sharply the generic features of *Pseudocryptocoeloma* erected by WARD (1936) on *P. parvus* from Lindeman Island, Queensland, but at least the Samoan species is surely not congeneric with the Australian species for having eight nude areas on the carapace. As a result the genus *Lophoplax* includes five species, and thus the present new species is the sixth in the genus.

The new species is readily distinguished from all the known species enumerated above by the quite different arrangement of the nude raised areolets.

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